

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

This listing of the claims with indicated amendments, deletions and cancellations and new claims will replace all prior version, and listings, of claims in the application.

LISTING OF THE CLAIMS

1. (currently cancelled) A computer system comprising at least one data source and a mapping system wherein object programming applications are tailored to delegate both the accessing of a data source and the generation of SQL strings to a runtime library repository, which repository can access the database directly or through a database driver, such as a JDBC driver, without the need to imbed specific database accessing mechanisms in the application code.
2. (currently cancelled) A system according to claim 1, having a concurrent parameter setting mechanism wherein the runtime library repository can be set to access a particular data source and to generate data source specific database calls and SQL strings.
3. (currently cancelled) A object language software program that can generate application programming code from database maps and thereby provide a

Page 2 of 33

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

- programming application, which delegates to a runtime library repository both of the functions of accessing a database and generating SQL strings that are specific to a database or to a JDBC driver for a type of database.
4. (currently cancelled) An object language software program according to claim 3, wherein the runtime library repository can be modified and tailored to optimize database access calls and to optimize the generation of SQL strings for a particular database.
 5. (currently cancelled) A computer system according to claim 1, wherein the mapping system portion is designed to provide different maps for particular objects to different users and does not permit direct access of computer system users to JDBC drivers for any mapped data sources of the computer system, and wherein this mapping system provides varying levels of access to the mapped data sources for at least two different users of the same system, whereby a user only has access to a particular list of maps that are available to the security level of that user.
 6. (currently cancelled) A computer system according to claim 1, wherein the mapping system portion is designed to provide to a system user who is accessing, creating or updating maps, or accessing objects on a system to

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

make data changes related to a particular object and to promulgate the changes to that object as either local or global changes on the computer system.

7. (currently cancelled) A computer system according to claim 6, wherein the mapping system portion provides an interface permitting an authorized user to edit or create the tables, fields, or attributes of a data map for an object as a table format or XML file format without requiring the user to have extensive knowledge of a particular relational database as a source of the data, or extensive knowledge about how to directly access that relational database.
8. (currently cancelled) A computer system according to claim 1, wherein the mapping system provides an interface and features that permit a user to access, create, or up date the metadata of a map as a dynamic computer system update, without requiring the user to either open a new connection to the data source or to restart an object application program that is running while the user is dynamically evaluating or changing metadata for a map, and wherein the metadata. of a map that a user can dynamically evaluate or change includes a map description of data or relationships between data, and wherein such map description is at least one member selected from the group

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

consisting of a data source relationship, a relationship between at least two objects of an object application, and both a data source relationship and a relationship between at least two objects of an object application.

9. (currently cancelled) A local or distributed computer system comprising a fully synchronized caching system that synchronizes the caching of a delegated data source access management object to relational mapping layer and the transaction coordination facilities of an application server, and the computer system comprises (i) a first data source referred to as the primary data source, (ii) a second data source referred to as the cache data source that is associated with an object to relational mapping layer to provide a data source cache for object applications, and (iii) a server having a transaction coordinator with the ability to register multiple data sources, wherein:

- (a) both the primary data source and the cache data source are registered with the transaction coordinator facilities of the server, and
- (b) the cache data source acts as secondary data source to speed up data accesses for an object application and the cache data is plugged into the object to relational mapping layer, and

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

- (c) registration of the cache data source with the transaction monitor of the server provides the feature that any changes to the cache will automatically be synchronized with the primary data source or record upon transaction completion, including commit or roll-back of changes for both data sources.
10. (currently cancelled) The computer system of claim 9, further comprising a mapping system wherein object programming applications are tailored to delegate both the accessing of a data source and the generation of SQL strings to a runtime library repository, which repository can access the database directly or through a database driver, such as a JDBC driver, without the need to imbed specific database accessing mechanisms in the application code, and wherein the transaction monitor of the server calls the mapping system and in the call delegates accessing or updating of data in the data sources registered with the transaction monitor, and wherein the transaction monitor does not complete a transaction until it is notified by the mapping system that a data source has been updated by the mapping system such that any changes to the cache will automatically be synchronized with

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

- the primary data source or record upon transaction completion, including commit or roll-back of changes for both data sources.
11. (currently cancelled) The computer system of claim 10, wherein at least one cache data source can be set up as a memory-resident entire database, as a disk resident database, or as both a memory resident database and disk resident and in each case the cache data source is synchronized with the transaction monitor of the server.
12. (currently cancelled) The computer system of claim 11, wherein the at least one cache data source is a memory resident database that is a portion of a disk resident database and the size of the memory allocated for the memory resident database can be set by the user of the computer system, or can be automatically allocated by the system according to pre-set protocols.
13. (currently cancelled) The computer system of claim 11, wherein the at least one cache data source is adapted to cache at least one member selected from the group consisting of data from a data source, a source structure map, an object or object definition, metadata, object schema, an object schema, and an XML file which defines or describes a member selected from the group

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

consisting of data from a data source, a source structure map, an object or object definition, metadata, and an object schema.

14. (currently cancelled) A data source access repository that is a collection of information repositories and software program libraries, comprising at least one database access runtime library repository of software program libraries and system information,

wherein

the data source access repository has the ability to make database specific calls and to generate database specific SQL strings by accessing at least one other software program library, information and logic to permit the data source access repository to map information related to one or more of a member selected from the group consisting of relational databases, object databases and object programming schemas, and the like,

and wherein

the data source access repository can access map information and use that information to make database specific calls and to generate database specific SQL strings that can be passed to a JDBC driver to access, retrieve and write data to and from a selected data source.

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

15. (currently canceled) A data source access repository according to claim 14, comprising one or more items selected from the group consisting of maps of database schemas, object definitions, other programming definitions or parameters, object metadata, database settings, and complex relationship definitions.
16. (currently canceled) A computer system comprising at least one data source and a mapping system wherein object programming applications are tailored to delegate both the accessing of a data source and the generation of SQL strings to a runtime library repository wherein the repository comprises a collection of system information and software program libraries, which repository can access the database directly or through a database driver, such as a JDBC driver, without the need to imbed specific database accessing mechanism classes in the application code of an object programming application prior to runtime.
17. (currently canceled) A system according to claim 16, having a concurrent parameter setting mechanism wherein the runtime library repository can be

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

PATENT
Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

set to access a particular data source and to generate data source specific database calls and SQL strings.

18. (currently cancelled) A object language software program that can generate application programming code from stored database maps and thereby provide a programming application without the need for database accessing mechanism classes within the application itself by including with the application classes object code logic that delegates to an independent and modifiable runtime library repository both the functions of accessing a database and generating SQL strings that are specific to a database or specific to a JDBC driver for a type of database.
19. (currently cancelled) An object language software program according to claim 18, wherein the runtime library repository can be modified and tailored to optimize database access calls and to optimize the generation of SQL strings for a particular database, without requiring any modification to the logic of object classes in applications that will delegate database access functions to the repository beyond the inclusion of logic instructing the application to delegate database access functions to the runtime repository.

PATENTThought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

20. (currently cancelled) A computer system according to claim 16, wherein the mapping system portion is designed to provide different maps for particular objects to different users and does not permit direct access of computer system users to JDBC drivers for any mapped data sources of the computer system, and wherein this mapping system provides varying levels of access to the mapped data sources for at least two different users of the same system, whereby a user only has access to a particular list of maps that are available to the security level of that user.
21. (currently cancelled) A computer system according to claim 16, wherein the mapping system portion is designed to provide to a system user who is accessing, creating or updating maps, or accessing objects on a system to make data changes related to a particular object and to promulgate the changes to that object as either local or global changes on the computer system.
22. (currently cancelled) A computer system according to claim 21, wherein the mapping system portion provides an interface permitting an authorized user to edit or create the tables, fields, or attributes of a data map for an object as a table format or XML file format without requiring the user to have extensive

PATENTThought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

- knowledge of a particular relational database as a source of the data, or extensive knowledge about how to directly access that relational database.
23. (currently cancelled) A computer system according to claim 16, wherein the mapping system provides an interface and features that permit a user to access, create, or up date the metadata of a map as a dynamic computer system update, without requiring the user to either open a new connection to the data source or to restart an object application program that is running while the user is dynamically evaluating or changing metadata for a map, and wherein the metadata. of a map that a user can dynamically evaluate or change includes a map description of data or relationships between data, and wherein such map description is at least one member selected from the group consisting of a data source relationship, a relationship between at least two objects of an object application, and both a data source relationship and a relationship between at least two objects of an object application.
24. (currently cancelled) A local or distributed computer system comprising a fully synchronized caching system that synchronizes the caching of a delegated data source access management object to relational mapping layer and the transaction coordination facilities of an application server, and the

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

computer system comprises (i) a first data source referred to as the primary data source, (ii) a second data source referred to as the cache data source that is associated with an object to relational mapping layer to provide a data source cache for object applications, and (iii) a server having a transaction coordinator with the ability to register multiple data sources, wherein:

- (a) both the primary data source and the cache data source are registered with the transaction coordinator facilities of the server, and
- (b) the cache data source acts as secondary data source to speed up data accesses for an object application and the cache data is plugged into the object to relational mapping layer, and
- (c) registration of the cache data source with the transaction monitor of the server provides the feature that any changes to the cache will automatically be synchronized with the primary data source or record upon transaction completion, including commit or roll-back of changes for both data sources.

25. (currently cancelled) The computer system of claim 24, further comprising a mapping system wherein object programming applications are tailored to

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

delegate both the accessing of a data source and the generation of SQL strings to a runtime library repository, which repository can access the database directly or through a database driver, such as a JDBC driver, without the need to imbed specific database accessing mechanism classes in the application code, and wherein the transaction monitor of the server calls the mapping system and in the call delegates accessing or updating of data in the data sources registered with the transaction monitor, and wherein the transaction monitor does not complete a transaction until it is notified by the mapping system that a data source has been updated by the mapping system such that any changes to the cache will automatically be synchronized with the primary data source or record upon transaction completion, including commit or roll-back of changes for both data sources.

26. (currently cancelled) The computer system of claim 25, wherein at least one cache data source can be set up as a memory-resident entire database, as a disk resident database, or as both a memory resident database and disk resident and in each case the cache data source is synchronized with the transaction monitor of the server.

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

27. (currently cancelled) The computer system of claim 26, wherein the at least one cache data source is a memory resident database that is a portion of a disk resident database and the size of the memory allocated for the memory resident database can be set by the user of the computer system, or can be automatically allocated by the system according to pre-set protocols.
28. (currently cancelled) The computer system of claim 27, wherein the at least one cache data source is adapted to cache at least one member selected from the group consisting of data from a data source, a source structure map, an object or object definition, metadata, object schema, an object schema, and an XML file which defines or describes a member selected from the group consisting of data from a data source, a source structure map, an object or object definition, metadata, and an object schema.
29. (currently cancelled) A data source access repository capable of handling delegated database access functions, wherein the data source access repository is a collection of information repositories and software program libraries and comprises at least one database access runtime library repository of software program libraries and system information wherein:

(a) the data source access repository has the ability to make database

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

PATENT
Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

specific calls and to generate database specific SQL strings by accessing at least one other software program library, information and logic to permit the data source access repository to map information related to one or more of a member selected from the group consisting of relational databases, object databases and object programming schemas, and the like,

and

(b) the data source access repository can access map information and use that information to make database specific calls and to generate database specific SQL strings that can be passed to a JDBC driver to access, retrieve and write data to and from a selected data source.

30. (currently cancelled) A data source access repository according to claim 29, comprising one or more items selected from the group consisting of maps of database schemas, object definitions, other programming definitions or parameters, object metadata, database settings, and complex relationship definitions.
31. (new) A computer system comprising at least one computer implemented program, at least one data source, and a mapping system wherein object

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

programming applications are tailored to delegate both the accessing of a data source and the generation of SQL strings to a runtime library repository wherein the repository comprises a collection of system information and software program libraries, which repository can access the database directly or through a database driver, such as a JDBC driver, without the need to imbed specific database accessing mechanism classes in the application code of an object programming application prior to runtime, wherein:

- i) the mapping system portion is designed to provide to a system user who is accessing, creating or updating maps, or accessing objects on a system to make data changes related to a particular object and to promulgate the changes to that object as either local or global changes on the computer system, or
- ii) the mapping system portion provides an interface permitting an authorized user to edit or create the tables, fields, or attributes of a data map for an object as a table format or XML file format without requiring the user to have extensive knowledge of a particular relational database as a source of the data, or extensive knowledge about how to directly access that relational database.

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

32. (new) A system according to claim 31, having a concurrent parameter setting mechanism wherein the runtime library repository can be set to access a particular data source and to generate data source specific database calls and SQL strings.
33. (new) A object language software program that can be implemented by a computer to generate application programming code from stored database maps and thereby provide a programming application without the need for database accessing mechanism classes within the application itself by including with the application classes object code logic that delegates to an independent and modifiable runtime library repository both the functions of accessing a database and generating SQL strings that are specific to a database or specific to a JDBC driver for a type of database, wherein the software logic comprises:
- i) a software module providing logic for a system user who is accessing, creating or updating maps, or accessing objects on a system to make data changes related to a particular object and to promulgate the changes to that object as either local or global changes on the computer system, or

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

- ii) a software module providing logic for an interface permitting an authorized user to edit or create the tables, fields, or attributes of a data map for an object as a table format or XML file format without requiring the user to have extensive knowledge of a particular relational database as a source of the data, or extensive knowledge about how to directly access that relational database.
34. (new) An object language software program according to claim 33, wherein the runtime library repository can be modified and tailored to optimize database access calls and to optimize the generation of SQL strings for a particular database, without requiring any modification to the logic of object classes in applications that will delegate database access functions to the repository beyond the inclusion of logic instructing the application to delegate database access functions to the runtime repository.
35. (new) A computer system according to claim 31, wherein the mapping system portion is designed to provide different maps for particular objects to different users and does not permit direct access of computer system users to JDBC drivers for any mapped data sources of the computer system, and wherein this mapping system provides varying levels of access to the mapped

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

data sources for at least two different users of the same system, whereby a user only has access to a particular list of maps that are available to the security level of that user.

36. (new) A computer system according to claim 31, wherein the mapping system provides an interface and features that permit a user to access, create, or up date the metadata of a map as a dynamic computer system update, without requiring the user to either open a new connection to the data source or to restart an object application program that is running while the user is dynamically evaluating or changing metadata for a map, and wherein the metadata of a map that a user can dynamically evaluate or change includes a map description of data or relationships between data, and wherein such map description is at least one member selected from the group consisting of a data source relationship, a relationship between at least two objects of an object application, and both a data source relationship and a relationship between at least two objects of an object application.
37. (new) A local or distributed computer system comprising fully synchronized caching system utilizing at least one computer implemented program that synchronizes the caching of a delegated data source access management

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

PATENT
Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

object to relational mapping layer and the transaction coordination facilities of an application server, and the computer system comprises (i) a first data source referred to as the primary data source, (ii) a second data source referred to as the cache data source that is associated with an object to relational mapping layer to provide a data source cache for object applications, and (iii) a server having a transaction coordinator with the ability to register multiple data sources, wherein:

- i. both the primary data source and the cache data source are registered with the transaction coordinator facilities of the server, and
- ii. the cache data source acts as secondary data source to speed up data accesses for an object application and the cache data is plugged into the object to relational mapping layer, and
- iii. registration of the cache data source with the transaction monitor of the server provides the feature that any changes to the cache will automatically be synchronized with the primary data source or record upon transaction completion, including commit or roll-back of changes for both data sources,

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

and the computer system further comprises a mapping system wherein object programming applications are tailored to delegate both the accessing of a data source and the generation of SQL strings to a runtime library repository, which repository can access the database directly or through a database driver, such as a JDBC driver, without the need to imbed specific database accessing mechanism classes in the application code, and wherein the transaction monitor of the server calls the mapping system and in the call delegates accessing or updating of data in the data sources registered with the transaction monitor, and wherein the transaction monitor does not complete a transaction until it is notified by the mapping system that a data source has been updated by the mapping system such that any changes to the cache will automatically be synchronized with the primary data source or record upon transaction completion, including commit or roll-back of changes for both data sources.

38. (new) The computer system of claim 37, wherein at least one cache data source can be set up as a memory-resident entire database, as a disk resident database, or as both a memory resident database and disk resident and in each

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

case the cache data source is synchronized with the transaction monitor of the server.

39. (new) The computer system of claim 38, wherein the at least one cache data source is a memory resident database that is a portion of a disk resident database and the size of the memory allocated for the memory resident database can be set by the user of the computer system, or can be automatically allocated by the system according to pre-set protocols.
40. (new) The computer system of claim 39, wherein the at least one cache data source is adapted to cache at least one member selected from the group consisting of data from a data source, a source structure map, an object or object definition, metadata, object schema, an object schema, and an XML file which defines or describes a member selected from the group consisting of data from a data source, a source structure map, an object or object definition, metadata, and an object schema.
41. (new) A data source access repository capable of handling delegated database access functions when said repository is accessed or utilized by a computer implemented program, wherein the data source access repository is a collection of information repositories and software program libraries and

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

comprises at least one database access runtime library repository of software program libraries and system information wherein:

(a) the data source access repository has the ability to make database specific calls and to generate database specific SQL strings by accessing at least one other software program library, information and logic to permit the data source access repository to map information related to one or more of a member selected from the group consisting of relational databases, object databases and object programming schemas, and the like,

(b) the data source access repository can access map information and use that information to make database specific calls and to generate database specific SQL strings that can be passed to a JDBC driver to access, retrieve and write data to and from a selected data source, and

(c) a table, field, or attribute of at least one data map for an object, when that at least one map is included within the runtime repository, can be accessed and edited by software logic in a table format or be edited as an XML file format without requiring the user to have extensive knowledge of a particular relational database as a source of the data, or to have extensive knowledge about how to directly access that relational database.

PATENT

Amendment dated February 10, 2004
Reply to Office Action of August 10, 2004

Thought, Inc. Attorney Docket No.: 0036-022A
Serial No. 09/987,489

42. (new) A data source access repository according to claim 42, comprising one or more items selected from the group consisting of maps of database schemas, object definitions, other programming definitions or parameters, object metadata, database settings, and complex relationship definitions.